FERNO

When it's Critical™

Users' Manual

Model 28-Z
Chair Cot

August 2006 GLO

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Disclaimer

This manual contains general instructions for the use, operation and care of this product. The instructions are not all-inclusive. Safe and proper use of this product is solely at the discretion of the user. Safety information is included as a service to the user. All other safety measures taken by the user should be within and under consideration of applicable regulations. It is recommended that training on the proper use of this product be provided before using this product in an actual situation.

Retain this manual for future reference. Include it with the product in the event of transfer to new users. Additional free copies are available upon request from Customer Relations.

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1 - SAFETY INFORMATION

1.1 Warning

Warning notices indicate a potentially hazardous situation which, if not avoided, could result in injury or death.

⚠ WARNING

Untrained operators can cause injury or be injured. Permit only trained personnel to operate the cot.

Improper use of the cot can cause injury. Use the cot only for the purpose described in this manual.

An unrestrained patient can fall off the cot and be injured. Use restraints to secure the patient on the cot.

Improper operation can cause injury. Operate the cot only as described in this manual.

An unattended patient can be injured. Stay with the patient at all times.

Helpers can cause injury. Maintain control of the cot, operate the controls, and direct all helpers.

Improper maintenance can cause injury. Maintain the cot only as described in this manual.

Improper parts and service can cause injury. Use only Ferno parts and Ferno-approved service on the cot.

Modifying the cot can cause injury and damage. Use the cot only as designed by Ferno.

Attaching improper items to the cot can cause injury. Use only Ferno-approved items on the cot.

1.2 Important

Important notices emphasize important usage or maintenance information.

Important

Squeezing the undercarriage control handle when unfolding or unloading the cot will prevent the undercarriage from locking. Do not use this handle when unfolding or unloading the cot.

1.3 Bloodborne Disease Notice

To reduce the risk of exposure to bloodborne diseases such as HIV-1 and hepatitis when using the cot, follow the disinfecting and cleaning instructions in this manual.

1.4 Cot and Fastener Compatibility

Combining different manufacturers' products into a "mixed-component" cot/cot fastener system can increase the user's risk of injury and damage.

Ferno-Washington, Inc. strongly recommends that only Ferno-manufactured cots be used in Ferno-manufactured cot fasteners, and that only Ferno-manufactured cot fasteners be used for securing Ferno-manufactured cots in ambulances.

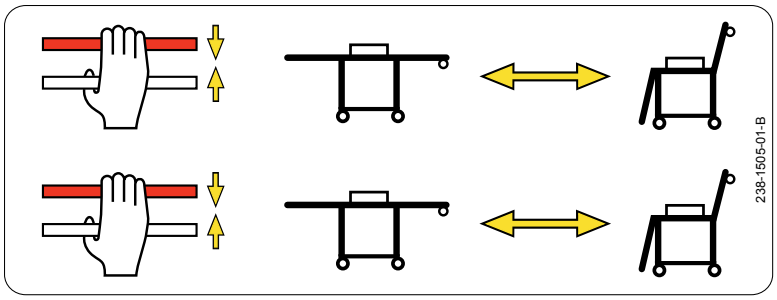
ANY COMBINATION OF A FERNO COT OR COT FASTENER WITH A NON-FERNO COT OR COT FASTENER IS MISUSE OF THE FERNO PRODUCT. Responsibility for the outcome of known, intentional misuse rests squarely on the misuser.

1.5 Safety and Instruction Labels

Safety and instruction labels place important information from the users' manual on the cot. Read and follow label instructions. Replace worn or damaged labels immediately. New labels are available from EMSAR (page 30) or from your distributor.

The following labels are affixed to the cot:

This safety label is affixed to the foot-end main frame of the cot. The General Warning of Potential Injury triangle applies to all three specific symbols in the box (see Symbol Glossary below).



This instruction label is affixed to the red Cot/Chair Conversion Handle at the head end of the cot. It illustrates squeezing the handle to change the cot to a chair and the chair to a cot.

1.6 Symbol Glossary

The symbols defined below are used on the cot and/or in this users' manual. Ferno uses symbols recognized by the International Standards Organization (ISO), the American National Standards Institute (ANSI), and the emergency medical services industry.

General Warning of Potential Injury. Specific warnings are indicated by the symbols or words used with the triangle symbol.

Cot operation requires a minimum of two trained operators when a patient is on the cot.

Read the Users' Manual.

The load limit of the cot is 700 lb (318 kg).

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2 - OPERATOR SKILLS AND TRAINING

2.1 Skills

Operators using the cot need:

- ❑ a working knowledge of emergency patient-handling procedures.
- ❑ the ability to assist the patient.
- ❑ a complete understanding of the procedures described in this manual.

⚠ WARNING

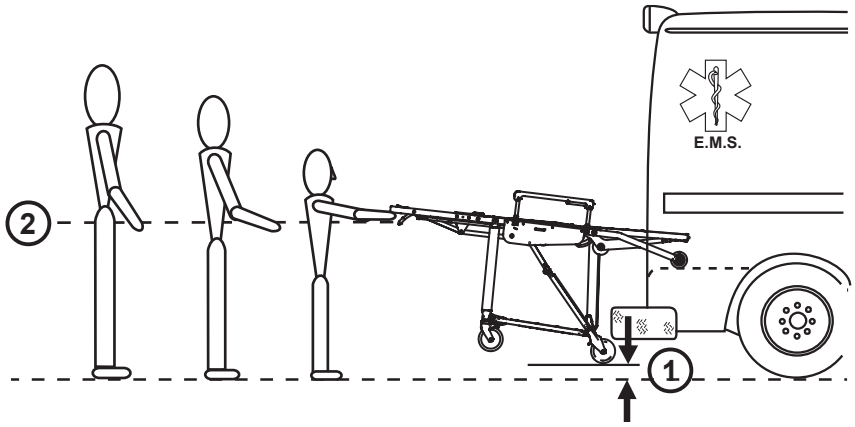
Untrained operators can cause injury or be injured. Permit only trained personnel to operate the cot.

2.2 Training

Trainees need to:

- ❑ follow a training program designed by their training officer.
- ❑ read this manual. For additional free users' manuals, contact your Ferno distributor or Ferno Customer Relations (page 33).
- ❑ practice with the cot before using it in regular service.
- ❑ be tested on their understanding of the cot.
- ❑ record their training information. A sample training record sheet is provided on page 34.

2.3 Height and Strength Considerations



When loading the cot, the foot-end (control) operator must lift and hold the weight of the cot, patient, and equipment until the cot legs have folded.

When unloading the cot, the control operator must lift and hold the weight, keeping the cot wheels off the ground, until the undercarriage has unfolded completely and locked. (1)

Supporting this weight requires greater strength from short operators than from tall operators because short operators must raise their arms higher in relation to their shoulders. (2)

Be aware that if the ambulance is parked on an uneven surface, the control operator (and any helpers) may need to lift the cot higher than normal to allow the legs to unfold completely and lock.

Note: *Use additional help as needed to lift the weight of the cot, patient, and equipment (see* Using Additional Help, *page 27).*

3 - ABOUT THE COT

3.1 Cot Description

The Model 28-Z Chair Cot (called the "cot" in this manual) is an emergency patient-handling device designed to transport a patient in a ground-based ambulance.

The cot is for professional use by a minimum of two trained operators. Additional help is needed when working with heavy loads.

The cot is designed for use with an updated Ferno® Model 173 Cot Fastening System and is shipped with a kit to update one Model 173 Fastener (see *Updating Your Model 173 Cot Fastener*, page 11.

Cot features include:

- Easy conversion between cot and chair positions
- One intermediate chair position
- Pneumatic backrest, infinitely adjustable between 0° and 85°
- Two integrated telescoping side lift handles
- Foot-end swivel wheels with locks
- Sealed casters and bearings
- Locking mattress
- Complete set of patient restraints
- (Optional) Folding sidearms
- (Optional) Carry handles for foot end and sides
- (Optional) Foot-end lead handle

⚠ WARNING

Improper use of the cot can cause injury. Use the cot only for the purpose described in this manual.

AMBULANCE INFORMATION

The ambulance bumper extension should not exceed 16 inches. The patient compartment should have a level floor large enough for the folded cot, and a Ferno® cot fastener (not included) installed.

The cot is for use with ambulances that meet the requirements of the Federal Ambulance Specification KKK-A-1822. For information, contact Federal Supply Services. Specifications Section. Suite 8100. 470 E. L'Enfant Plaza, SW. Washington, DC 20407.

3.2 General Specifications

COT CONFIGURATION

Height
- Folded (Minimum) ..... 9 in. (22 cm)
- Raised (Maximum) ..... 33 in. (84 cm)
- Loading Height ..... 27 in. (68 cm)

Length
- Folded ..... 80 in.(204 cm)
- Raised ..... 75 in. (190 cm)

Width
- Overall Width ..... 25 in. (63 cm)

CHAIR CONFIGURATION

Maximum Height ..... 55 in. (140 cm)
Overall Width ..... 25 in. (63 cm)
Overall Depth (front to back) ..... 48 in. (122 cm)

COT AND CHAIR

Weight** (w/o optional features) ..... 69 lb (31.2 kg)
Load Limit ..... 69 lb (31.2 kg)
Strength to Weight Ratio (SWR)*** 10:1

General specifications are rounded to the nearest whole number. Metric conversions are calculated before rounding the Imperial numbers. For more information about the chair cot, contact Ferno Customer Relations (page 33) or your Ferno distributor.

Ferno reserves the right to change specifications without notice.

* Height is the distance from the ground to the patient surface at the seat panel. Loading height is the distance from the ground to the bottom of the loading wheels.

**Weight is determined without mattress, restraints, accessories, or optional features.

***Strength to Weight Ratio is the cot load limit divided by the cot weight.

LOAD LIMIT

Inspect the cot if the load limit has been exceeded (see *Inspecting the Cot*, page 29).

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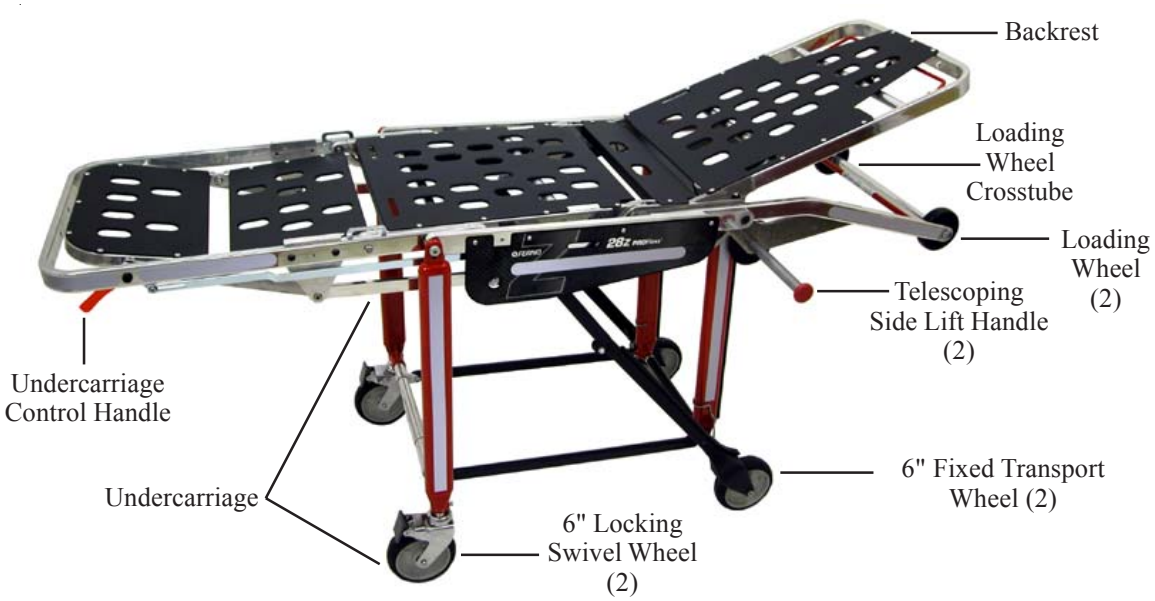
3.3 Components

HEAD END



Model 417-1 Torso Restraint with Guide Strap (1)

Model 430 Restraints (2)

To request additional free users' manuals contact Ferno Customer Relations (page 33) or visit us at www.ferno.com

3.4 Cot and Chair Positions

Cot Position
Use for Rolling and Loading.

Intermediate Chair Position
Use for patient comfort.
Chair may be rolled in this position.

Chair Position
Use for Patient Transfer and Rolling.

Folded Position
Use for Patient Transfer and Ambulance Transport.

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4 - SETUP

4.1 Preparing the Ambulance and Cot for Use

- ❑ Update your Model 173 Fastener if necessary (see *Updating Your Model 173 Cot Fastener*, this page)
- ❑ Attach an approved set of restraints as shown on page 12.
- ❑ Attach the mattress as shown on page 13.
- ❑ Attach any accessories shipped with the cot. Follow the instructions included with accessories. Keep accessory instruction manuals with this manual.
- ❑ Inspect the cot. See *Inspecting the Cot*, page 29.

4.2 Updating Your Model 173 Cot Fastener

Model 173 Fasteners with old-style hooks must be updated to function properly with the 28-Z chair cot. Fasteners with updated hooks are compatible with all previous Model 28 chair cots as well as with the 28-Z chair cot.

Your fastener hook is new style and does not require updating if it has a lip as illustrated in Figure 1A

Your fastener hook is old-style and requires updating if there is no lip, as illustrated in Figure 1B. Use Model 173 Fastener Update Kit 082-2134 from Ferno Customer Relations (page 33).

SERIAL NUMBER LOCATIONS

To establish the style of your fastener and take the correct action, Ferno's Customer Relations representative will ask for the serial number or numbers on your fastener hook. Please have the serial number, or numbers, at hand.

Serial numbers are located as follows:

1. the plate portion of the hook (Figure 1C)
2. the vertical portion of the hook (Figure 1D)
3. both the plate portion **and** the vertical portion of the hook as in Figures 1C and 1D. (These will be two different serial numbers.) In this case, the fastener hook has already been updated.

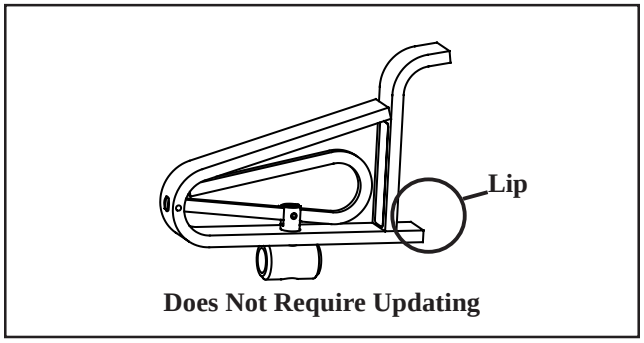

Figure 1A- New-Style Hook

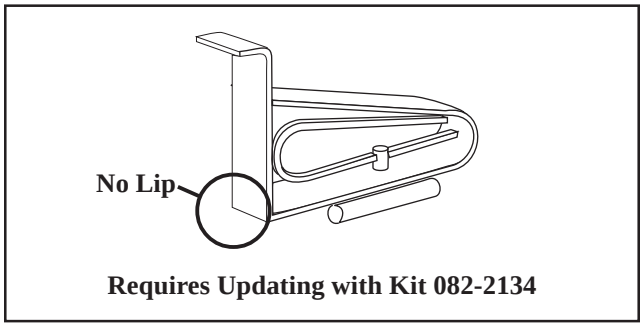

Figure 1B- Old-Style Hook

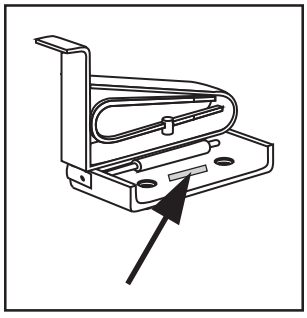

Figure 1C - Serial Number Location

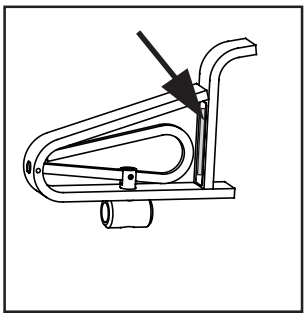

Figure 1D - Serial Number Location

4.3 Patient Restraints

- Use a complete set of patient restraints (Figure 2) to secure the patient on the cot or chair.
- Attach the restraints to the attachment points specified in Figure 3.
- Use the guide strap supplied with the torso restraint system. The guide straps holds the shoulder straps in place on the backrest frame. Follow the instructions below for attaching the guide strap and shoulder straps.

  Note: *For complete details on attaching, using, and maintaining all the restraints supplied with the cot, see the restraint users' manuals provided with the restraints. Additional, free manuals are available from Ferno Customer Relations (page 33).*

ATTACHING THE GUIDE STRAP AND SHOULDER STRAPS

1. Position the guide strap between the backrest and the backrest control handle, and slide it up against the backrest frame (Figure 4).
2. Thread the looped end of one shoulder strap up through one side of the guide strap, then thread the shoulder strap over the backrest control handle and under the backrest frame to the front of the backrest (Figure 5).
3. Slide the hardware end of the shoulder strap through the looped end (Figure 6) and pull to tighten the strap around the backrest frame.
4. Repeat with the remaining shoulder strap.
5. Snug the guide strap up against the backrest frame (see Figure 8B, page 13).

⚠ WARNING

An unrestrained patient can fall off the cot and be injured. Use restraints to secure the patient on the cot.

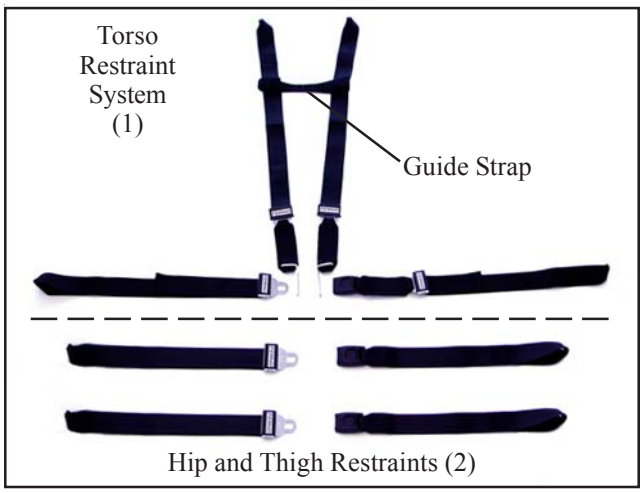

Figure 2 - Patient Restraints

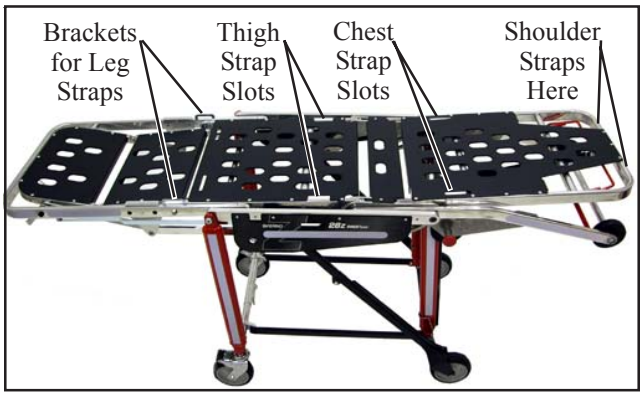

Figure 3 - Attachment Points for Patient Restraints

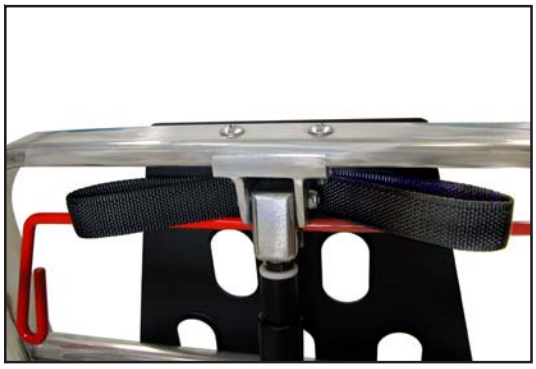

Figure 4 - Positioning the Guide Strap

Figure 5 - Threading the Shoulder Strap

Figure 6 - Attaching the Shoulder Strap

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4.4 Locking Mattress

- The two-piece mattress is designed with articulated segments (Figure 7) that conform to the cot and chair configurations.
- Hooks on the underside of each mattress anchor it to the cot (Figures 8A and 8B) for easier patient transfer.
- **To attach a mattress:** align the mattress segments with their matching bed panels, then feed the hooks through the bed-panel holes.
- **To remove a mattress:** slide one hand under the mattress and apply gentle upward pressure as you use your other hand to slide the hooks from the bed-panel holes.

> **Tip**
> Attach the gusset segment first (Figure 7). This positions the upper mattress properly for attaching the seat and back segments.

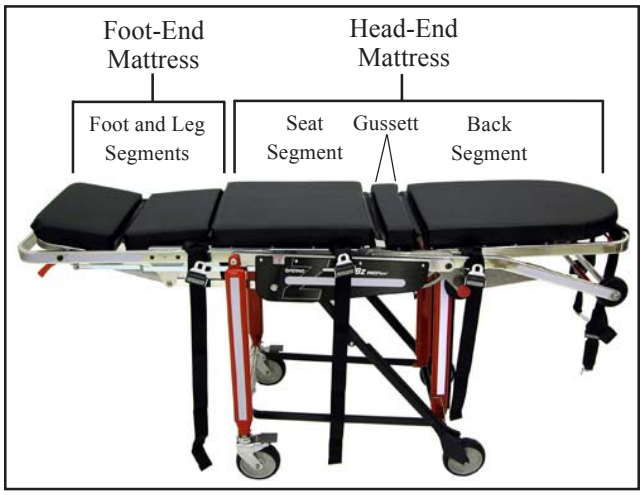

Figure 7 - Locking Mattress Components

Figure 8A - Mattress Hooks Anchored Through Backrest Panel Holes

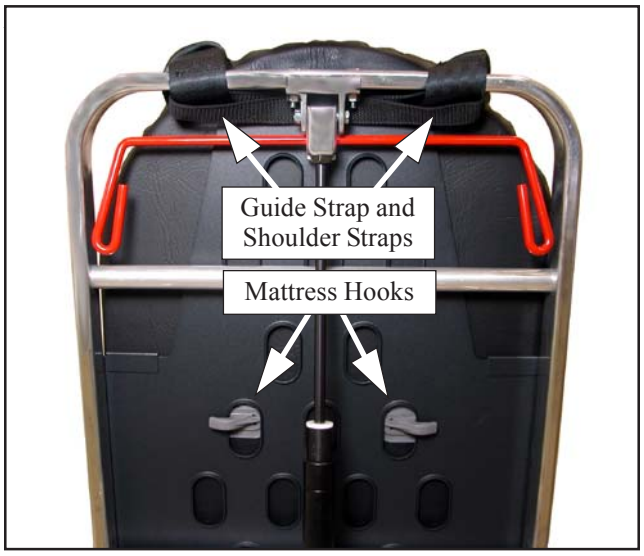

Figure 8B - Backrest with Shoulder Straps Attached and Mattress Anchored in Place

5 - USING THE FEATURES

5.1 Undercarriage Control Handle

- **Location:** Patient's left side at foot end of cot.
- **Purpose:** Releases the safety lock to allow the undercarriage to fold when folding or loading the cot.
- **Use:** Squeeze the undercarriage control handle **(**Figure 9) **only** when folding the cot and when loading the cot into an ambulance.

  ° Do not squeeze the control handle when unfolding or unloading the cot. Doing so will prevent the undercarriage from locking.

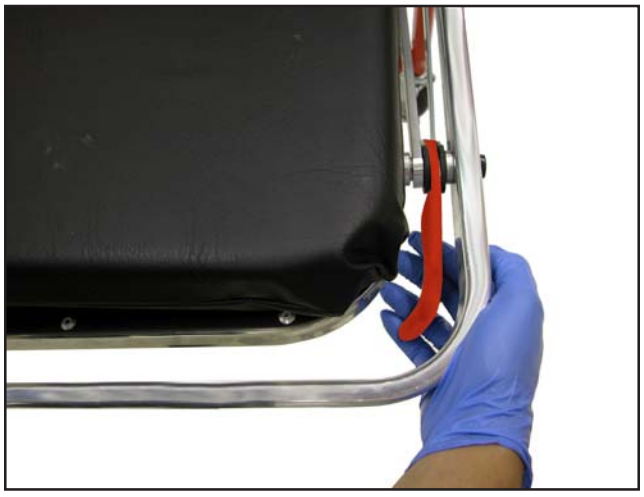

Figure 9 - Using the Undercarriage Control Handle

Important

Squeezing the undercarriage control handle when unfolding or unloading the cot will prevent the undercarriage from locking. Do not use this handle when unfolding or unloading the cot.

5.2 Telescoping Side Lift Handles

- **Location:** Both sides of the cot at the head-end legs.
- **Purpose:** Provide additional grasping points for lifting and rolling the cot and rolling the chair.
- **Use:** Pull to extend a handle (Figure 10). Push to retract a handle (Figure 11).

  ° To maintain cot balance, always use both handles.

  ° Use both hands in a cylinder grip as in Figure 12 when doing a four-person lift.

  Note: *Additional lifting handles are available for the foot end and sides of the cot (see Optional Lifting Handles, page 18).*

Figure 10 - Side Lift Handle Retracted

Figure 11 - Side Lift Handle Extended

Figure 12 - Using the Cylinder Grip for a Four-Person Lift

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5.3 Cot/Chair Conversion Handle

- **Location:** Next to the loading-wheel crosstube at the head end of the cot (Figure 13). A label illustrating the handle's use is affixed to the center portion of the handle.
- **Purpose:** Squeezing the handle releases the locking mechanism and allows the cot to be moved to any of its three locking positions: cot; intermediate; and chair (Figure 14).
- **Before Use:**
  - Loosen the leg restraints.
  - Lower the backrest before moving from the cot to the intermediate or chair position. This prevents the patient's upper body from leaning forward in an uncomfortable position.
- **Use:**
  - To convert the cot to a chair: Lower the backrest. Exert a little downward pressure on the loading-wheel crosstube to relieve the load on the lock mechanism, then squeeze the conversion handle while raising the crosstube until the chair position is reached.
  - To convert the chair to a cot: Exert a little upward pressure on the loading-wheel crosstube to relieve the load on the lock mechanism, then squeeze the handle while pushing down on the loading-wheel crosstube until the cot position is reached.
  - To achieve the intermediate position: Follow either of the conversion instructions above **except** you must release the handle when you begin to raise or lower the loading-wheel crosstube. The lock will engage when the intermediate position is reached.

Recommendation

Ferno recommends operating the conversion handle with two hands (Figure 15). Alternatively, one hand may be used as in Figure 16 if local protocols, operator strength, and patient weight permit.

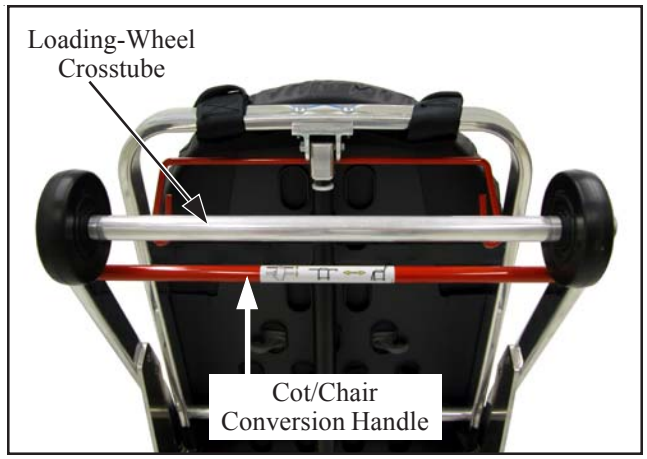

Figure 13 - Conversion Handle Location

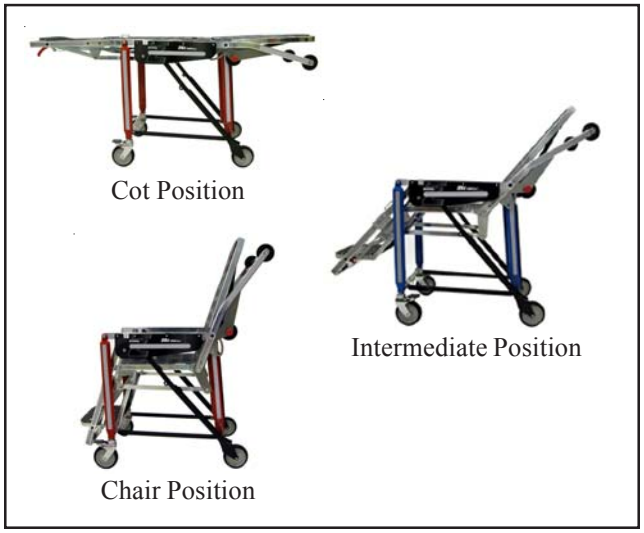

Figure 14 - Cot and Chair Locking Positions

Important

Before moving from the cot to the chair or intermediate position, lower the backrest to prevent leaning the patient's upper body too far forward and causing discomfort.

Figure 15 Recommended: Use Two Hands

Figure 16 Alternative: Use One Hand

5.4 Backrest Control Handle

- **Location:** Beneath the backrest.
- **Purpose:** Adjusts between 0° and 85° for patient comfort or medical necessity.
- **Before Use:**
  ° Be prepared to support the backrest and patient weight while adjusting the backrest.
- **Use:** To adjust, press the red control hand toward the backrest (Figure 17), raise or lower the backrest to the desired position, and release the handle to lock in place.
  ° The gas spring is under pressure to ease raising and lowering. Control the upward movement of the backrest so it does not move too forcefully.

  Note: *When the operator cannot stand behind the backrest it can be adjusted from the side but the operator must be able to support the weight throughout the adjustment.*

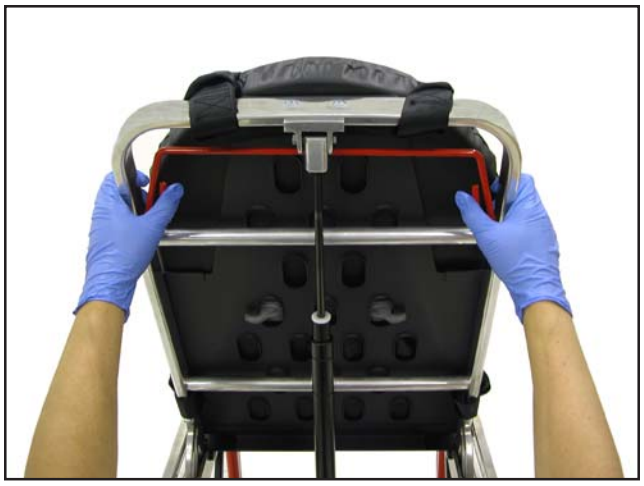

Figure 17 - Using the Backrest Control Handle

5.5 Wheel Locks

- **Location:** Both foot-end wheels.
- **Purpose:** Locks stop wheels from rotating and swiveling to help keep the cot stationary during patient transfer and certain medical procedures.
  ° Wheel locks are not designed for use as brakes. Remain with the cot and keep control of it at all times. Do not leave the cot or patient unattended.
- **Use:** To engage, press down on the free end of the lock lever with your toe (Figure 18). To disengage, press down on the opposite end of the lock lever with your toe (Figure 18).

Figure 18 - Engaging and Disengaging the Wheel Lock

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5.6 Optional Folding Sidearms

- **Location:** Both sides of the cot.
- **Purpose:** Sidearms add patient comfort.
- **Use:** To raise, move the sidearm upward and toward the head end of the cot until it locks in place (Figure 19). To lower, squeeze the sidearm release (Figure 20) and move the sidearm toward the foot-end of the cot until it is flat against the main frame.
  - ° Do not use the sidearms to lift the cot. Grasp the cot frame when lifting the cot.

Important

Sidearms are not designed for lifting the cot. Lift the cot by grasping the loading-wheel crosstube at the head end, the main frame at the foot end, and when needed, the telescoping side lift handles and/or the optional auxiliary foot-end or side lifting handles.

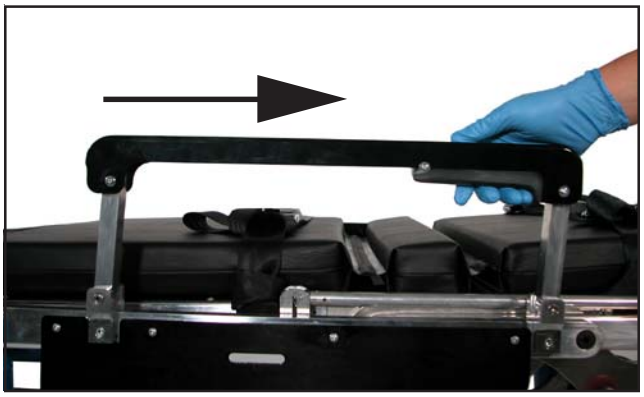

Figure 19 - Raising a Sidearm

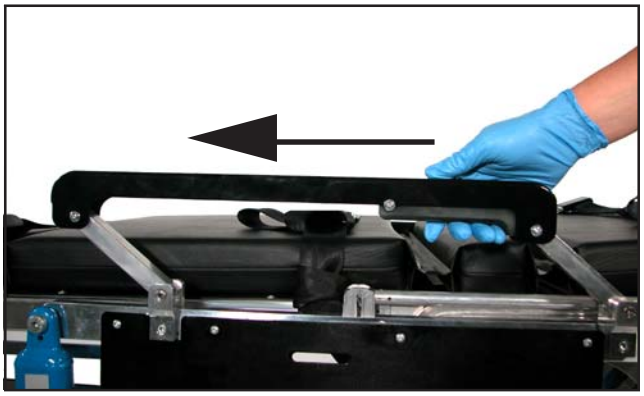

Figure 20 - Folding a Sidearm

5.7 Optional Lead Handle

- **Location:** Foot end of cot.
- **Purpose:** Aids in rolling the cot on smooth, level surfaces.
- **Use:** The control operator grasps the lead handle to pull and steer the cot (Figure 21) while the head-end operator grasps the loading-wheel crosstube and pushes.

Figure 21 - Using the Lead Handle To Pull the Cot

5.8 Optional Auxiliary Handles

- **Location:** Sets of auxiliary folding handles attach to the main frame of the cot at the foot end and at the sides near the foot end.
- **Purpose:** To provide additional grasping points for lifting and maneuvering the cot.
  ° The handles fold for storage and unfold to lock into the lifting position for use. (Figures 22 and 23).
- **Use:** To unfold, pull the handle to unlock, then swing it away from the cot until it locks in the lifting position. To fold, pull the handle to unlock, then swing it toward the cot until it locks in the storage position.

  ° Before moving the cot to the chair position, fold the foot-end handles toward the center of the cot.

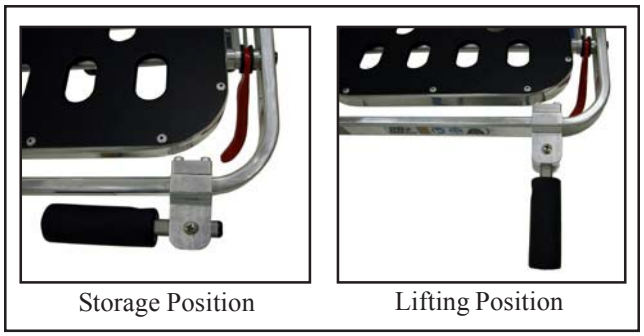

Figure 22 - Foot-End Handle Locking Positions

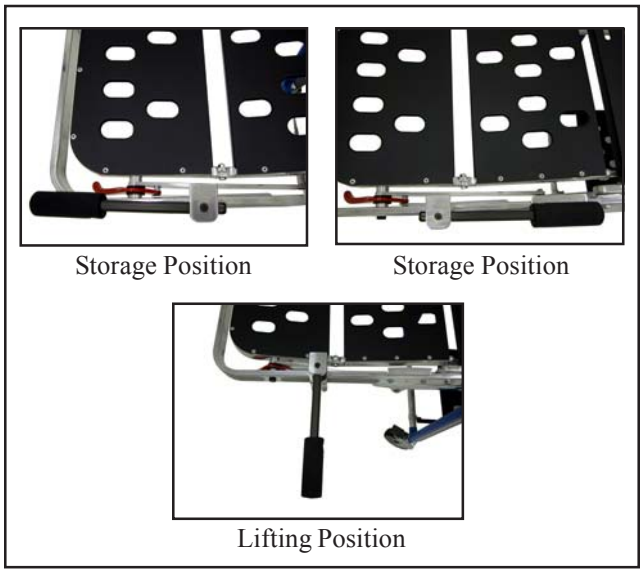

Figure 23 - Side Auxiliary Handle Locking Positions

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6 - USING THE COT

6.1 Before Placing the Cot in Service

- ❑ Personnel who will work with the cot need to read this users' manual (Figure 24) and the manual for the cot fastener.
- ❑ Update your Model 173 Cot Fastener if needed (see *Updating Your Model 173 Fastener*, page 11 for details).
- ❑ Attach the restraints and mattress according to instructions on pages 12 and 13, and in the restraint users' manuals. To obtain additional, free restraint users' manuals, contact Ferno Customer Relations, page 33.
- ❑ Confirm that the cot operates properly. Follow instructions in *Inspecting the Cot*, page 29.

6.2 General Guidelines for Use

- Medical advice is beyond the parameters of this manual.
- It is the users' responsibility to ensure safe practices for the patient and themselves.
- Using the cot requires a minimum of two trained operators when a patient is on the cot.
- Follow standard emergency patient-handling procedures when operating the cot.
- Operators work together at all times.
- Operators communicate with each other and use coordinated movements to operate the cot.
- The assisting operator should maintain control of the head end of the cot at all times.
- Lift only the weight you can safely handle. Use additional help when working with heavy loads (patient and equipment). For placement of helpers, see *Using Additional Help*, page 27.
- Do not exceed the load limit of the cot.
- Stay with the patient at all times.
- Always use the patient restraints.

⚠ WARNING

Improper operation can cause injury. Operate the cot only as described in this manual.

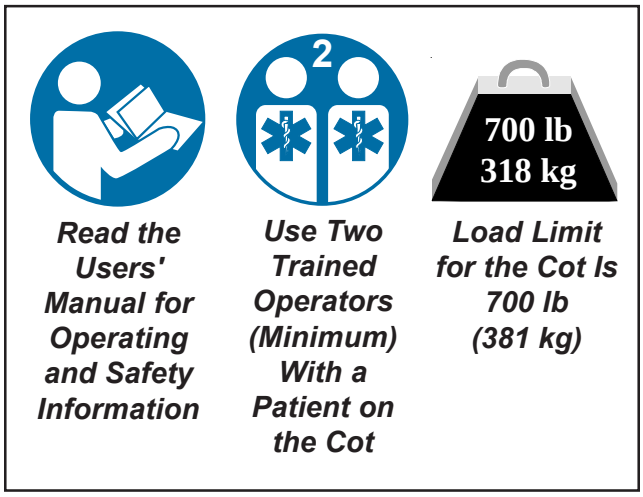
2
700 lb
318 kg
Read the Users' Manual for Operating and Safety Information
Use Two Trained Operators (Minimum) With a Patient on the Cot
Load Limit for the Cot Is 700 lb (381 kg)

Figure 24 - Symbols on Cot and in Users' Manual

⚠ WARNING

An unattended patient can be injured. Stay with the patient at all times.

⚠ WARNING

An unrestrained patient can fall off the cot and be injured. Use restraints to secure the patient on the cot.

6.3 Unfolding the Cot With a Patient

Raising the cot from the folded to the unfolded position requires a minimum of two trained operators (Figure 25). If additional help is needed, direct the helpers to use the telescoping side lift handles (Figure 26).

To raise the cot:

1. **Both Operators:** Stand at opposite ends of the cot, facing each other.

   The **foot-end operator** grasps the cot main frame.

   The **head-end operator** grasps the loading-wheel crosstube.

   ° Grasp the loading-wheel crosstube, not the backrest frame or the conversion handle. The backrest frame and conversion handle are not designed to be used to lift the cot.

2. **Both Operators:** Lift the cot until the undercarriage unfolds completely and locks in place (Figure 25).

   To ensure that the safety lock is fully engaged, you must lift the cot until all wheels are off the ground, allowing the lock to fully engage if it has not already done so.

   Note: *Do not squeeze the undercarriage control handle. This will prevent the lock from engaging* (*see* Undercarriage Control Handle, *page 14*).

3. When you are sure the lock is engaged, set the cot down.

Figure 25 - Using Two Operators

Figure 26 - Using Two Operators and Helpers

Important

Lift the cot until all four wheels are off the ground. This allows the locking mechanism to fully engage if it has not already done so.

Important

When lifting the cot, the head-end operator grasps the loading-wheel crosstube. Do not grasp the backrest frame to lift the cot. The backrest frame is not designed for lifting.

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6.4 Folding the Cot With a Patient

It is rarely necessary to fold the cot with the patient on it, but if this situation does arise, the operators will require a third person as a helper.

To fold the cot with a patient on it:

1. **Assisting Operator:** Fasten patient restraints.
2. **Both Operators:** Stand facing each other at opposite ends of the cot with hands in the lifting position.
3. **Helper:** Stand beside the cot near the head end and place your foot firmly against the nearest transport wheel, as in Figure 27, to prevent the undercarriage from moving forward when the operators begin folding it.
4. **Both Operators and Helper:** Both operators lift the weight of the cot slightly off the wheels, then the foot-end operator squeezes the undercarriage control handle and the operators move the cot slightly toward the head-end operator.

   As soon as the undercarriage begins to fold, the helper steps away from the cot.

   The operators continue lowering the cot until the undercarriage is completely folded.

Figure 27 - Preparing to Fold the Cot With a Patient

Important

Both operators should expect, and be prepared to control, the normal downward movement of the cot that occurs when the control handle is squeezed.

6.5 Empty Cot - Folding/Unfolding With One Operator

When there is no patient on the cot, it can be folded and unfolded by one operator.

To fold the empty cot:

1. Tip the cot onto its loading wheels (Figure 28).
2. Grasp the foot-end corners of the main frame, squeeze the undercarriage control handle, and lower the cot until the undercarriage is completely folded.

To unfold the empty cot:

1. Grasp the corners of the foot-end main frame and raise the foot end of the cot until the cot tips onto its loading wheels and the undercarriage unfolds completely and locks into place.
2. Tip the cot back onto all four transport wheels.

Figure 28 - Preparing to Fold the Empty Cot

6.6 Transferring the Patient To the Cot

1. Choose the raised or lowered position for the cot and place the cot next to the patient.
2. Retract the side lift handles. If the cot has sidearms, fold them flat.
3. Unfasten the restraints and arrange the straps so they will not interfere with transferring the patient onto the cot.
4. Transfer the patient onto the cot using approved EMS procedures and local protocols.
5. Adjust the backrest. If the cot has sidearms, raise them.
6. Fasten and adjust the patient restraints (Figure 29).
7. Before moving the cot or changing its position, make sure sheets and other articles will not interfere with cot operation.

Figure 29 - Transferring the Patient To the Cot

6.7 Transferring the Patient To the Chair

1. Retract the side lift handles.
2. Unfasten the restraints and arrange the straps so they will not interfere with transferring the patient onto the chair.
3. Place the chair near the patient.
4. Engage the wheel locks.
5. Assist the patient into the chair using approved EMS procedures and local protocols (Figure 30).
6. Fasten and adjust the patient restraints.
7. Before changing the chair position or moving the chair, make sure sheets and other articles will not interfere with operating the chair.
8. If the patient's medical condition or comfort requires, adjust the chair to the intermediate position.
9. Release the wheel locks and roll the chair.

Figure 30 - Transferring the Patient Onto the Chair

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6.8 Rolling the Cot and Chair

GENERAL GUIDELINES

- Rolling the cot or chair with a patient requires a minimum of two trained operators working together.
- Roll the cot or chair on smooth, unobstructed surfaces whenever possible.
- To cross a low obstacle such as a door sill, lift the weight off the wheels enough to allow the wheels to roll smoothly over the obstacle.
- If you must cross a high obstacle such as a curb, lift the cot by the main frame and loading-wheel crosstube and carry it across the obstacle.
- When rolling the chair, do not cross obstacles such as curbs. Either seek an alternate route or convert the chair to a cot and carry it across the obstacle.
- Use help as needed to safely control the combined weight of the cot, patient, and any equipment (see *Using Additional Help,* page 27).

ROLLING AS A COT

1. **Foot-End Operator:** Grasp the main frame or lead handle and pull the cot (Figure 31).
2. **Head-End Operator:** Stand at the head end of the cot, grasp the loading-wheel crosstube, and help guide and move the cot (Figure 31).
3. **Helpers:** Grasp the extended side lift handles and help push the cot.

   Note: *When rolling the cot downhill, roll it foot-end first to help maintain end-to-end balance. If it is not medically appropriate to do this, you may roll it head end first, but to maintain cot balance the head-end operator must grasp the loading-wheel crosstube and exert some upward force.*

ROLLING AS A CHAIR

1. **Head-End Operator:** Grasp the loading-wheel crosstube and push and steer the cot. The telescoping side lift handle may also be used (see Figure 32).
2. **Assisting Operator:** Grasp a telescoping side lift handle and assist pushing.

Figure 31 - Rolling the Cot

Important

Roll the cot downhill foot-end first. If it is not medically appropriate to do this, roll the cot head-end first, but the head-end operator must lift up slightly on the load-wheel crosstube to ensure cot balance is maintained.

Figure 32 - Rolling the Chair

6.9 Loading the Cot

1. **Both Operators:** Roll the cot to the open doors of the ambulance patient compartment, aligning the cot with the fastener.
2. **Assisting Operator:** Raise the ambulance folding bumper.
3. **Control Operator:** Push the cot into the ambulance until both loading wheels are on the ambulance floor and the cot undercarriage contacts the vehicle bumper.

   Assisting Operator: Stand at the side of the cot and make sure both loading wheels are securely on the ambulance floor (Figure 33).
4. **Control Operator:** Lift the cot until the wheels are off the ground, then squeeze the control handle and push the cot completely into the patient compartment. The undercarriage will fold as the cot is pushed into the ambulance (Figure 34).

   Assisting Operator: Assist with pushing the cot into the ambulance and guide it into the cot fastener (Figure 34).
5. **Control Operator:** Release the control handle.
6. **Control Operator:** Secure the cot in the cot fastener.
7. **Assisting Operator:** Lower the ambulance folding bumper.

Figure 33 - Assisting Operator Guides Loading Wheels onto Ambulance Floor

Figure 34 - Operator Pushes Cot into Ambulance and Fastener

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6.10 Unloading the Cot

1. **Control Operator:** Release the cot from the cot fastener.
2. **Control Operator:** Grasp the main frame at the foot end of the cot and begin pulling the cot out of the ambulance **but keep the loading wheels on the ambulance floor.** The undercarriage will begin to unfold.

   Assisting Operator: Stand at the patient compartment door and make sure the loading wheels remain securely on the ambulance floor (Figure 35).
3. **Control Operator:** Raise the foot end of the cot high enough for the undercarriage to unfold completely and lock into place.

   Assisting Operator: When the undercarriage has unfolded, verify that it has locked into place and communicate that to the control operator.
4. **Control Operator:** Lower the foot end of the cot until all four transport wheels are on the ground.
5. **Both Operators:** Roll the cot away from the ambulance.
6. **Assisting Operator:** Lower the ambulance folding bumper.

Figure 35 - Assisting Operator Ensures Loading Wheels Remain on Ambulance Floor Until Undercarriage Locks

Important

Squeezing the undercarriage control handle when unfolding or unloading the cot will prevent the undercarriage from locking. Do not use this handle when unfolding or unloading the cot.

6.11 One Operator Loading/ Unloading An Empty Cot

If local protocols permit, the **empty** cot can be loaded into, or unloaded from, an ambulance by one trained operator.

ONE-OPERATOR LOADING

1. Raise the ambulance folding bumper.
2. Roll the cot to the open doors of the ambulance patient compartment, aligning the cot with the fastener.
3. Push the cot into the ambulance until both loading wheels are on the ambulance floor and the cot undercarriage contacts the vehicle bumper.
4. Lift the cot until the wheels are off the ground, then squeeze the control handle and push the cot into the patient compartment (Figure 36) until the fastener antler captures the loading-wheel crosstube.
5. Release the control handle.
6. Secure the cot in the cot fastener.
7. Lower the folding bumper.

ONE-OPERATOR UNLOADING

1. Raise the ambulance folding bumper.
2. Release the cot from the cot fastener.
3. Grasp the main frame at the foot end of the cot and begin pulling the cot out of the ambulance **but keep the loading wheels on the ambulance floor.** The undercarriage will begin to unfold.
4. Raise the foot end of the cot high enough for the undercarriage to unfold completely and lock into place.
5. Lower the foot end of the cot until all four transport wheels are on the ground.
6. Finish rolling the cot out of the ambulance.
7. Lower the ambulance folding bumper.
8. Roll the cot away from the ambulance.

Figure 36 - Loading the Cot with One Operator

Important

Squeezing the undercarriage control handle when unfolding or unloading the cot will prevent the undercarriage from locking. Do not use this handle when unfolding or unloading the cot.

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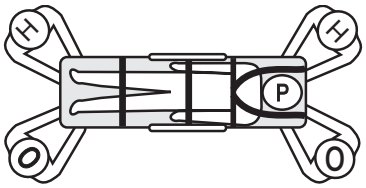
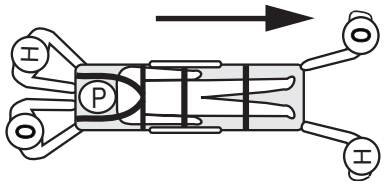
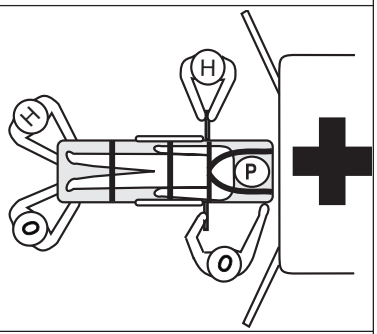
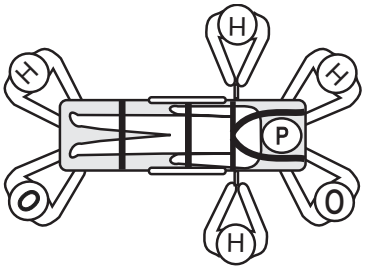
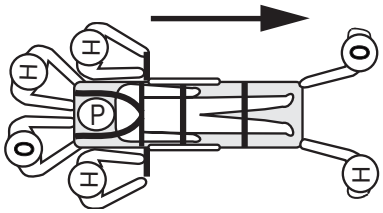
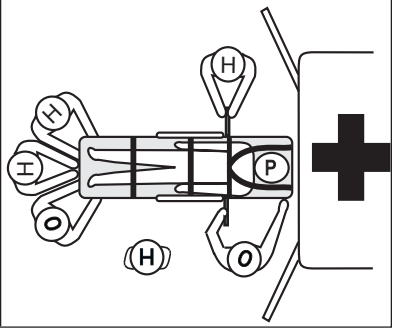
6.12 Using Additional Help

Operating the cot requires a minimum of two trained operators. They may need additional help when working with heavy loads (patient plus equipment). The trained operators should maintain control of the cot, operate the controls, and direct all helpers. The chart below shows suggested placement for operators and helpers.

Helpers	Changing Levels	Rolling	Loading/Unloading
Two Operators + Two Helpers			
Two Operators + Four Helpers			

Key: O = Operator H = Helper P = Patient

⚠ WARNING

Helpers can cause injury. Maintain control of the cot, operate the controls, and direct all helpers.

LOAD LIMIT

Inspect the cot if the load limit has been exceeded (see *Inspecting the Cot*, page 29.

7 - MAINTENANCE

7.1 Maintenance Schedule

The cot requires regular maintenance. Set up and follow a maintenance schedule. A sample maintenance record sheet is provided on page 35. The table below represents minimum intervals for maintenance.

When using maintenance products, follow the manufacturers' directions and read the manufacturers' material safety data sheets. You can purchase a recommended disinfectant from your Ferno distributor or Ferno Customer Relations (page 33).

Minimum Intervals For Basic Maintenance	Each Use	As Needed	Each Month
Disinfecting (this page)	•		
Cleaning (this page)		•	
Inspecting (page 29)		•	•
Lubricating (page 29)		•	

⚠ WARNING

Improper maintenance can cause injury. Maintain the cot only as described in this manual.

Important

Disinfectants and cleaners containing bleach, phenolics, or iodines can damage the cot. Use caution when disinfecting and cleaning with products containing these chemicals.

Important

Using abrasive cleaning compounds or applicators on the cot can cause damage. Use only non-abrasive cleaning compounds and applicators on the cot.

7.2 Disinfecting and Cleaning Restraints

Remove restraints from the cot. Disinfect and clean the restraints only as directed in the restraint users' manuals provided with the restraints.

Additional, free manuals can be ordered from Ferno Customer Relations (page 33).

7.3 Disinfecting and Cleaning the Mattresses

To disinfect: Remove the upper and lower mattresses from the cot. Apply disinfectant to the mattresses following the disinfectant manufacturer's instructions for application method and contact time.

To clean: Use a soft cloth to wash the mattress with a mild detergent in warm water.

Rinse the mattresses with clear water and hang them to dry, or dry them with a towel.

7.4 Disinfecting and Cleaning the Cot

To disinfect: Remove restraints and mattresses. Apply disinfectant to all surfaces following the disinfectant manufacturer's instructions for application method and contact time.

Ferno recommends inspecting the cot for obvious damage as you disinfect it.

To clean: Hand wash all parts of the cot with warm water and a mild detergent.

Rinse with warm, clear water. Dry the cot with a towel or allow it to air dry.

Important

Water under high pressure, or steam, penetrates joints, flushes away lubricant, and causes corrosion. Use caution when cleaning moving parts such as joints and hinges.

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7.5 Inspecting the Cot

Have your service's equipment maintenance personnel inspect the cot, following the checklist below and working the cot through all its functions as described in this manual.

If the inspection shows damage or excessive wear, remove the cot from service until repair is made. See *Parts and Service,* pages 30 and 31.

INSPECTION CHECKLIST

- ❑ Are all components present?
- ❑ Is the cot free of excessive wear?
- ❑ Are all screws, nuts, bolts, rivets, and roll pins securely in place?
- ❑ Do all moving parts operate smoothly and properly?
- ❑ Does the undercarriage safety lock function properly?
- ❑ Does the chair/cot conversion bar lock function properly?
- ❑ Does the cot load and unload properly?
- ❑ Does the cot roll smoothly?
- ❑ Do the wheels have some tread?
- ❑ Are the restraints properly installed?
- ❑ Is restraint webbing in good condition with no cuts or frayed edges?
- ❑ Are restraint buckles free of visible damage and do they operate properly?
- ❑ Do installed accessories operate properly without interfering with cot operation?
- ❑ Is the ambulance properly prepared for the cot (approved fastener installed)?

7.6 Lubricating the Cot

Disinfect and clean the chair before applying lubricant.

There are two identical lubrication points, located on opposite sides of the chair at the main hinge (see Figure 37).

Apply one or two drops of a light lubricant such as EZ-1 or SAE 30-weight oil inside the opening, then work the chair through alternating chair and cot positions a few times to distribute the lubricant.

Wipe away excess lubricant.

Do not lubricate any other parts of the cot. Doing so can cause dirt and foreign particles to collect on those parts and cause poor performance.

Important

Lubricating parts that should not be lubricated allows dirt and foreign particles to collect on those parts, resulting in damage. Lubricate **only** the points shown.

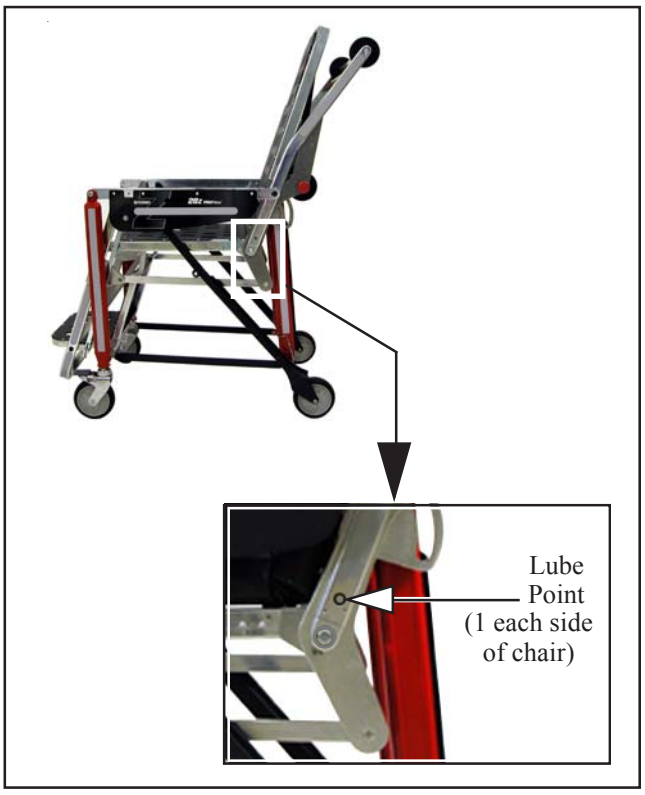

Figure 37 - Lubrication Point (Identical Point Is Located on Opposite Side of Chair)

8 - PARTS AND SERVICE

8.1 Parts and Service - U.S.A. and Canada

To order parts or for professional cot repair, contact EMSAR® - the only agent authorized by Ferno to manage, service, and repair Ferno products. EMSAR factory-trained technicians use Ferno-approved parts and repair procedures. EMSAR has a franchise location serving you. For details, phone, fax, or visit EMSAR's web site.

1.800.73.EMSAR (Phone)
1.937.383.1051 (Fax)
www.EMSAR.com (Internet)

⚠ WARNING

Improper parts and service can cause injury. Use only Ferno parts and Ferno-approved service on the cot.

⚠ WARNING

Modifying the cot can cause injury and damage. Use the cot only as designed by Ferno.

8.2 Parts and Service - Worldwide

To order Ferno parts and for professional cot repair, contact your Ferno distributor. Your distributor is the only agent authorized by Ferno to manage, service, and repair Ferno products.

8.3 Parts List

Ref. #	Description	Part #
1	Swivel Caster with Brake Assembly (with screw)	190-1626
2	6" Wheel with Bearing	190-1144
3	Finger Guard with Hardware	190-1629
4	Finger Guard Label Sheet	190-1632
5	Red Side Extension Knob w/Hardware	190-1634
6	4" Loading Wheel with Bushing	090-0539
7	Gas Assist Cylinder w/Hardware	190-1627
8	Loading Wheel Axle with Cover, Tube, and Nuts	190-1628
9	Backrest Release Handle w/Hardware	190-1630
Not Shown		
10	Reflective Label Sheet (complete set)	190-1631
11	Safety Label Sheet (complete set)	190-1633
12	Lead Handle with Hardware	190-1209

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8.4 Parts Diagrams

Not Shown 10

11

12

9 - ACCESSORIES AND RELATED PRODUCTS

Ferno offers a full line of accessories and related products approved for use with the cot.

Follow the instructions packed with accessories. Keep the instructions with this manual. Be aware of any special considerations (loading heights, door heights, etc.) when using accessories.

Contact Ferno Customer Relations (page 33) or your Ferno distributor for product information.

Description	Part Number
417-1 Torso Restraint, black	031-3915
Guide Strap for Torso Restraint	031-3945
430 Restraint, 2-piece, 5 ft./152cm, black	031-3892
28-Z Mattress set	031-4031
28-Z Mattress, Head End	031-4037
28-Z Mattress, Foot End	031-4038
Model 173 Fastener Update Kit	082-2134

TOUCH-UP PAINT

Rescue red	081-9972
Day-glo green	081-9973
Safety orange	081-9974
Electric blue	081-9975
Black	081-9977
Platinum	Please Call

ACCESSORIES

Auxiliary Folding Handles, Foot End	082-2137
Auxiliary Folding Handles, Side	082-2136
Folding Sidearms (Pair)	082-2135
Lead Handle	082-2139
513-11 IV Pole with Storage Pouch	008-7157

RELATED PRODUCTS

445 Head Immobilizer	031-3855
132 Manta Rescue Aid (burgundy)	038-2969
Cot Rain Cover	031-3924
Transfer Board	010-7992
SaniZene® Hard Surface Cleaner/Disinfectant 4 ea., 1 gallon	078-9214

⚠ WARNING

Attaching improper items to the cot can cause injury. Use only Ferno-approved items on the cot.

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10 - LIMITED WARRANTY SUMMARY

Ferno products are warranted to be free from defects in material and workmanship for a period of one year, except:

- External finishes (gelcoat, paint, powdercoat, decals, etc.) are warranted for 90 days.
- Soft goods (webbing, vinyl, fabric, foam, etc.) are warranted for 90 days.
- Fiberglass AquaCiser tanks are warranted against leakage for 5 years.
- Stainless hydrotherapy tanks are warranted against tank shell leakage and corrosion for 5 years.
- Mortuary products (except hydraulic parts and soft goods) are warranted for 2 years.
- Ambulance cots and ambulance transporters (except external finish and soft goods) are warranted for 2 years.
- EZ Glide™ Chairs are warranted for 2 years.
- EMS bags (replaceable bottom excluded) and backboards are warranted for lifetime replacement. (Damage caused by accident, abuse, misuse or improper care will be repaired at a reasonable charge for which you will be informed prior to the repair work being done.)
- Integrated Charging System (ICS) is warranted for 2 years

Ferno repairs are warranted for 90 days from the date of repair.

This limited warranty applies only when the product is used as described in the instructions provided. The warranty period begins when the product is shipped from Ferno or when you receive it if you have proof of delivery. Shipping charges are not covered by this limited warranty. Ferno is not liable for shipping damages or damages sustained through using the product.

Non-Ferno products sold by Ferno retain the product manufacturer's original warranties. Ferno offers no warranties of any kind additional to those of the product manufacturer, nor does Ferno assume any liability for products manufactured by others.

Limited Warranty Obligation

If a product is proven defective, Ferno will repair or replace it, or, at our option, refund the item's purchase price. In no event is Ferno liable for more than the selling price of the product. The purchaser accepts these terms in lieu of all damages.

This is a summary of the limited warranty. The actual terms and conditions of the limited warranty, and the limitations of liability and disclaimers, are available upon request by calling 800-733-3766 or 937-382-1451.

11 - FERNO CUSTOMER RELATIONS

Customer service and product support are important aspects of each Ferno product.

Please have the serial number of your Ferno cot available when calling Ferno Customer Relations, and include it in all written communications.

For assistance, please contact Ferno Customer Relations:

Telephone (Toll-free) 1.877.733.0911
Telephone 1.937.382.1451
Fax (Toll-free) 1.888.388.1349
Fax 1.937.382.1191
Fax (International) ..... +1.937.382.6569
Internet ..... www.ferno.com

Serial Number _____

TRAINING RECORD		
Date	**Name**	**Training Method**

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MAINTENANCE RECORD

Date	Maintenance Performed	By